

Supplementary Table 1A Characteristics of 194 patients with pancreatic cancer who underwent endoscopic preoperative biliary drainage *via* plastic stent and nasobiliary catheter *n* (%)

	All patients (<i>n</i> = 194)	PS (<i>n</i> = 133)	NBC (<i>n</i> = 61)	<i>P</i> value
Sex, male	114 (59)	80 (60)	34 (56)	0.563
Age (yr)	68 (61-74)	67 (61-74)	69 (61-75)	0.716
Performance status, 0/1/2	145/45/4 (75/23/2)	99/32/2 (74/24/2)	46/13/2 (75/21/3)	0.692
Primary tumor size (mm)	23 (19-30)	25 (18-32)	22 (20-30)	0.691
Length of biliary stricture (mm)	15 (10-22)	15 (11-23)	15 (10-20)	0.152
Diameter of proximal bile duct (mm)	15 (12-17)	15 (12-17)	14 (11-17)	0.318
Involvement of intrapancreatic bile duct	185 (95)	126 (95)	59 (97)	0.529
Tumor invasion into duodenum	124 (64) ¹	84 (63)	40 (66)	0.662
Cholangitis on admission	13 (6.7)	9 (6.8)	4 (6.6)	0.957
Total bilirubin (mg/dL)	8.3 (4.4-12.5)	7.8 (3.8-12.3)	8.7 (6.0-13.1)	0.672

¹Data was not obtained in one patient. Data are expressed as numbers (%) or median (interquartile range). PS: Plastic stent; NBC: Nasobiliary catheter.

Supplementary Table 1B Characteristics of 175 patients with bile duct and gallbladder cancer who underwent endoscopic preoperative biliary drainage via plastic stent and nasobiliary catheter *n* (%)

	All patients (<i>n</i> = 175)	PS (<i>n</i> = 91)	NBC (<i>n</i> = 84)	<i>P</i> value
Sex, male	124 (71)	66 (73)	58 (69)	0.613
Age (yr)	71 (65–76)	71 (65–76)	71 (64–77)	0.741
Performance status, 0/1/2	145/29/1 (83/17/1)	76/15/0 (84/16/0)	69/14/1 (82/17/1)	0.477
Primary tumor size (mm)	20 (13–28)	15 (11–25)	22 (16–30)	0.010
Length of biliary stricture (mm)	18 (14–25)	16 (12–22)	20 (15–28)	0.041
Diameter of proximal bile duct (mm)	14 (12–17)	15 (12–18)	14 (11–16)	0.210
Involvement of intrapancreatic bile duct	119 (68)	66 (73)	53 (63)	0.181
Tumor invasion into duodenum	51 (29) ¹	26 (29)	25 (30)	
Cholangitis on admission	43 (25)	24 (26)	19 (23)	0.564
Total bilirubin (mg/dL)	8.3 (2.7–14.1)	8.1 (3.5–15.0)	8.4 (2.3–14.0)	0.809

¹Data was not obtained in one patient. Data are expressed as numbers (%) or median (interquartile range). PS: Plastic stent; NBC: Nasobiliary catheter.

Supplementary Table 2A Procedures, adverse events, and causes of dysfunction in 194 patients with pancreatic cancer who underwent preoperative plastic stent and nasobiliary catheter placement *n* (%)

	All patients (<i>n</i> = 194)	PS (<i>n</i> = 133)	NBC (<i>n</i> = 61)	<i>P</i> value
Procedures of the initial ERCP				
EST or EPBD	85 (44)	53 (40)	32 (52)	0.110
Biopsy or brushing of the bile duct	159 (82)	107 (80)	52 (85)	0.413
Positive for cancer	86 (44)	150 (59)	100 (60)	
Biliary stents/catheters placed				
Diameter 5–6/7–7.5/8.5–10 Fr	26/120/48 (23/56/20)	9/76/48 (7/57/36)	17/44/0 (28/72/0)	< 0.001
Pig-tailed tip/straight tip	62/122 ¹	37/96 (28/72)	25/26 (49/51)	0.0073
Placement of pancreatic stent	19 (10)	14 (11)	5 (8.2)	0.935
Adverse events (other than cholangitis)				
Pancreatitis	17 (8.8)	12(9.0)	5 (8.2)	0.849
Mild/moderate/severe	13/4/0	9/3/0	4/1/0	
Cholecystitis	2 (1.0)	1 (0.8)	1 (1.6)	0.531
Others	1 (0.5)	1 (0.8)	0 (0)	0.999
Stent/catheter dysfunction	63 (29)	51 (38)	12 (20)	0.0081

Causes of stent/catheter dysfunction				
Occlusion or cholangitis	45 (23)	39 (29)	6 (10)	0.013
Insufficient drainage	9 (4.6)	8 (6.0)	1 (1.6)	0.330
Migration	7 (3.6)	4 (3.0)	3 (4.9)	0.526
Inadvertent removal	2 (1.0)	NA	2 (3.3)	NA
Number of ERCPs	1 (1-2)	1 (1-1)	2 (1-2)	< 0.0001

¹Data was not obtained in 10 patients. A part of data on tips of PS/NBC was missing. PS: Plastic stent; NBC: Nasobiliary catheter; ERCP: Endoscopic retrograde cholangiopancreatography; EST: Endoscopic sphincterotomy; EPBD: Endoscopic papillary balloon dilation; NA: Not applicable.

Supplementary Table 2B Procedures, adverse events, and causes of dysfunction in 175 patients with bile duct and gallbladder cancer who underwent preoperative plastic stent and nasobiliary catheter placement *n* (%)

	All patients (<i>n</i> = 175)	PS (<i>n</i> = 91)	NBC (<i>n</i> = 84)	<i>P</i> value
Procedures of the initial ERCP				
EST or EPBD	82 (47)	40 (44)	42 (50)	0.423
Biopsy or brushing of the bile duct	157 (90)	80 (88)	77 (92)	0.412
Positive for cancer	122 (70)	150 (59)	100 (60)	
Biliary stents/catheters placed				
Diameter 5–6/7–7.5/8.5–10 Fr	57/89/29 (23/56/20)	9/53/29 (10/58/32)	48/36/0 (57/43/0)	< 0.001
Pig-tailed tip/straight tip	65/83 ¹	23/66 (26/74)	42/17 (71/29)	< 0.001
Placement of pancreatic stent	18 (10)	10 (11)	8 (10)	0.750
Adverse events (other than cholangitis)				
Pancreatitis	21 (12)	12 (13)	9 (11)	0.614
Mild/moderate/severe	15/6/0	11/1/0	4/5/0	0.015
Cholecystitis	2 (1.1)	1 (1.1)	1 (1.2)	0.955
Others	3 (1.7)	1 (1.1)	2 (2.3)	0.511

Stent/catheter dysfunction	45 (26)	29 (32)	16 (19)	0.0511
Causes of stent/catheter dysfunction				
Occlusion or cholangitis	33 (19)	24 (26)	9 (11)	0.013
Insufficient drainage	9 (5.1)	5 (5.5)	4 (4.8)	
Migration	2 (1.1)	0 (0)	2 (2.4)	
Inadvertent removal	1 (0.6)	NA	1 (1.2)	
Number of ERCPs	2 (1-2)	1 (1-1)	2 (2-2)	0.0573

¹Data was not obtained in 10 patients. A part of data on tips of PS/NBC was missing. PS: Plastic stent; NBC: Nasobiliary catheter; ERCP: Endoscopic retrograde cholangiopancreatography; EST: Endoscopic sphincterotomy; EPBD: Endoscopic papillary balloon dilation; NA: Not applicable.